

Netherton Park Nursery School

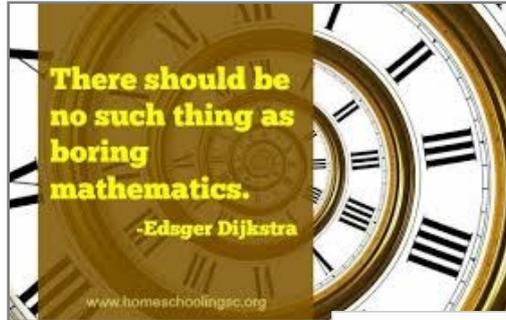


**Netherton Park
Nursery School**

Maths Policy

February 2023

“Don’t underestimate a child’s ability to do math.”



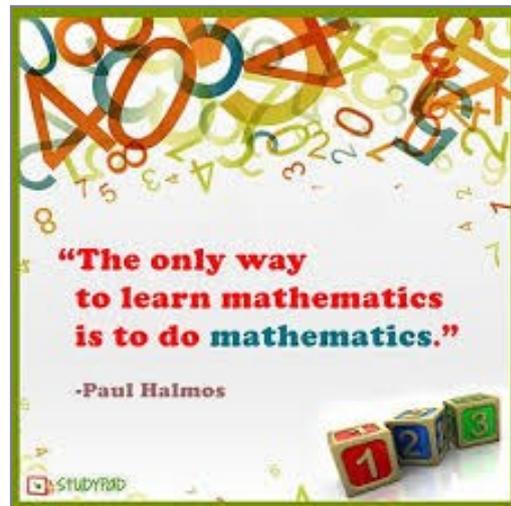
Never say, "I can't"
Always say, "I'll try"

GO DOWN DEEP ENOUGH INTO ANYTHING AND YOU WILL FIND MATHEMATICS -Dean Rubikoff
Check out how some of my fabulous students used their creativity to show how they looked deep to find math...

“The **MIND** is not a vessel to be filled, but a ~~FIRE~~ to be kindled.”

Plutarch

Math MAY NOT teach me how to *add love* OR *subtract hate*, BUT it GIVES ME HOPE that every problem has a *solution*.



THERE is a difference BETWEEN not knowing AND NOT KNOWING YET.
- Shella Tobias

MATH IS FUN!

“Education is not the learning of facts, but the training of the mind to think.”

Albert Einstein

Intent

“The first few years of a child’s life are especially important for mathematics development. Research shows that early mathematical knowledge predicts later reading ability and general education and social progress. Conversely, children who start behind in mathematics tend to stay behind throughout their whole educational journey.”

National Centre for Excellence in the of Teaching Mathematics

This policy reflects our Nursery School’s values and philosophy in relation to the teaching of Mathematics. It sets out a detailed framework which the staff can work within. It gives guidance on planning, teaching and assessment. The policy should be read in conjunction with the Early Years Foundation Stage for Mathematics which sets out developmental progress.

Our aims for the children are...

- To develop a real love of Maths and take this love on through their life
- To develop their critical thinking and problem solving skills
- To be curious and eager to learn new skills, and have the confidence ‘to have a go’
- To empower them to have the perseverance and confidence to tackle problems and face challenges.
- To make connections and notice patterns in their everyday experiences
- To develop a meta cognitive approach, testing out their own ideas, making predictions and to solve problems
- To have the skills to monitor their own learning
- To develop ideas of grouping, sequencing and cause and effect
- To represent their ideas and thoughts using words and using marks
- To have a rich mathematical vocabulary

***“Mathematics is one of the essential emanations of the human spirit -
a thing to be valued in and for itself, like art or poetry.”***

Oswald Veblen

Implementation—How we teach Maths

‘Much of young children’s spontaneous play is mathematical’

At Netherton Park Nursery School we place a high priority on early Maths, as part of both the curriculum and every day routines.

As part of their ongoing CPD, staff receive bespoke and specific training about teaching early Maths skills and the correct language linked to key skills, this is supported by individual targeted coaching support.

Subitising is one of the approach’s that influences the teaching of maths at Netherton Park Nursery School.

‘Subitising is quickly identifying, recognising, and naming the number in a group without counting’

We provide an environment which exposes the children to rich meaningful, mathematical learning opportunities. This includes well planned learning spaces created as part of our continuous curriculum provision, alongside adult directed experiences, where we will offer provocations, small and larger group experiences both at group times and within the learning environment.

We adopt a culture that fosters and supports Curiosity, thinking and problem solving, ensuring experiences offered are engaging, interesting, appropriate and challenging.

Staff will model appropriate mathematical language, demonstrate problem solving and include Maths within the daily routines of each session.

The learning spaces are enhanced with new and different resources, objects and materials to support children’s curiosity, this will then enhance their critical thinking, and problem solving skills and encourage a greater confidence to embrace new challenges and persevere with them when things happen unexpectedly.

Parents/carers are a huge part of the process, with staff supporting their understanding of the value of early Maths through inductions, stay and play sessions and information sent home, on Tapestry, our website and YouTube channel.



Adults Role

Children deserve adults who...

- Observe, wait, and take the time to really listen to the children's ideas, and language
- Comment rather than question
- Ask 'what do you see?', what do you notice?', how do you see it?
- Offer interesting materials, resources and objects as provocations for the children to investigate
- Ensure the continuous provision is rich with opportunities to deepen children's understanding of mathematical concepts
- Provide rich meaningful experiences, to explore Maths
- Model, demonstrate, and support children's investigation skills
- Notice the math opportunity when sharing books with the children
- Recognise the importance of everyday experiences, routines and transitions as valuable Maths learning opportunities
- Use number language in everyday situations, e.g can you pick up 2 pencils, ooh look I can see 3 oranges, I have 2 pigs.....
- Expose them to fun songs and rhymes that have number in them, introduce props to support their understanding of number.
- Represent numbers using objects, marks, and materials when singing rhymes
- Understand that the numeral is the abstract and should only be introduced once the children have number sense
- Model and support children's understanding of quantity
- Provide a range of real-life opportunities for children to explore a range of mathematical concepts (e.g weight, capacity, distance and height)
- Model and explore with the children, ways to solve real life problems, 'thinking' out loud to model the process, allowing them to make mistakes and test out their own ideas
- Tap into children's interests in areas of Maths such as number, shape and pattern and support them to extend their skills and knowledge
- Support children to widen their interests and access to new mathematical experiences
- Recognise that children are unique and learn in different ways, and to ensure the stimulating experiences provided reflect this.

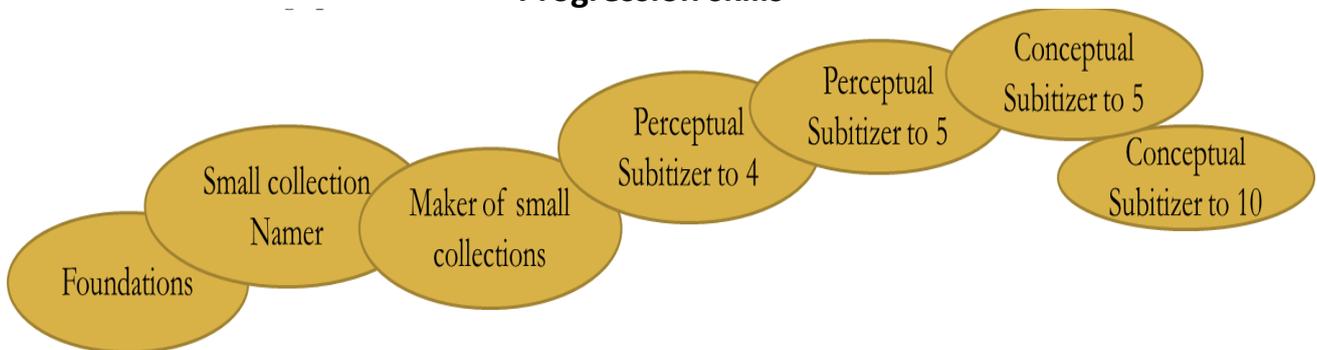
Counting Principles

What do children need to know?

- The one to one principle
- The stable order principle (This is where the number words need to be said in the same sequence every time).
- The Cardinal number principle (This is the last number that represents the quantity, the end of count signifies the quantity, it is understanding the any set can be seen, touched and counted)
- The abstract principle (This is the digit/numeral)
- The order-irrelevance principle (this is the recognition that no matter how many objects, it's not going to change)

Understanding number recognition

Progression skills



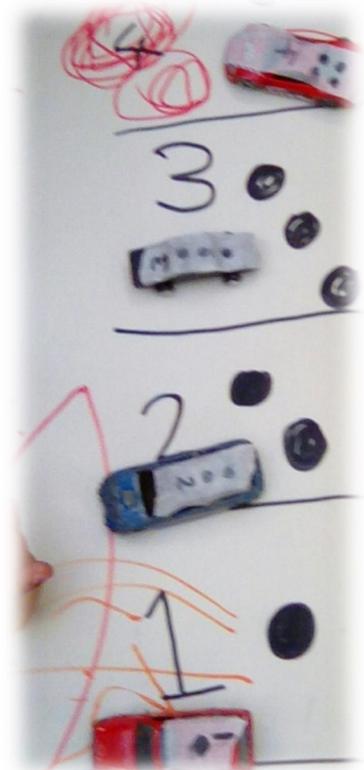
- Subitising begins in Infancy, Babies are intuitive and very sensitive to number from the first few months.
- They come to recognise and distinguish between very small numbers, connecting quantities to number words.
- When they just see how many objects are in very small collections
- They come to recognise and distinguish between very small numbers
- For example you might see three pebbles in the garden and quickly say three or three dots on a die. You perceive the three dots intuitively and at the same time.
- Subitising is a quantification method it is not counting!!
- This is very important and often missed when thinking about number, fast recognition of up to four items is the first step.

Counting skills progression

- Shows some awareness of a change in the quantity of objects as they play and explore
- Develops an awareness of number names through their enjoyment of action rhymes and songs that relate to their experience of numbers
- Shows some understanding that things exist, even when they are out of sight
- Demonstrates they know that things exist even when they can't see them
- Says some counting words randomly (not necessarily in context to counting)
- Recites some numbers in the correct sequence (not necessarily related to counting objects)
- Recites number names in order to 10 (not necessarily related to counting objects)
- Says some counting words correctly when counting small groups of objects (up to 3 or 4)
- Uses fingers, marks or objects to represent small quantities
- Begins to make comparisons between small quantities (using language 'more', 'less')
- Counts a set of objects by touching each one as they say a number (up to 3 or 4)
- Counts a set of objects accurately but has to recount when asked how many there are in the group altogether
- Knows that the last number they say when counting is the total amount in the group, without needing to recount
- Recognises the quantity of a small amount of objects without needing to count them
- Accurately counts things that cannot be moved, touched or seen, or that can't be moved around
- Knows when to stop, when counting out a given number of objects from a larger set
- Recognises that if a group of objects already counted is rearranged, the total number of objects doesn't change
- Recognises that if objects are added or removed from a group, the total number will change
- Counts irregular arrangements of objects
- Uses objects to find 1 more or 1 less than a number
- Knows the number that is 1 more than a number
- Knows the number that is 1 less than a number
- Estimates how many objects they can see and checks by counting all of them
- Finds the total number of items in two groups by counting all of them

Numeral recognition skills progression

- Has experienced seeing numbers in a range of practical contexts and on display in the environment
- Has experience of singing number rhymes, using props and numeral cards
- Shows an interest in representing numbers—using objects, fingers or marks
- Recognises some numbers of personal significance
- Recognises numerals 1-5
- Recognises numerals 6-10
- Selects the correct numeral to represent 1-5 objects
- Selects the correct numeral to represent 1-1 objects
- Sequences numerals 1-5 correctly
- Sequences numerals 1-10 correctly
- Begins to make marks to correctly represent a quantity
- Begins to write numerals to correctly represent a quantity
- Writes numerals to correctly represent a quantity



Mathematical vocabulary

Number	Addition and	Measures	Length	Height	Width	Depth
Number	More	Measure	Length	Tall	Wide	Deep
Zero	Add	Size	Long	Taller than	Wider than	Deeper than
One, two....	Altogether	Guess	Longer than	Tallest	Widest	Deepest
How many?	How many?	Estimate	Longest	Short	Fat	Shallow
Count	Put together	Enough	Short	Shorter than	Fatter than	Shallower than
Same as	1 more	Not enough	Shorter than	Shortest	Fattest	Shallowest
More	How many more?	Too much	Shortest	High	Narrow	
Less		Too little		Higher than	Narrower than	
Few, fewer	Take away	Too many			Narrowest	
Greater than	Less	Too few			Thin	
	How many are left?	Nearly			Thinner than	
	How many have gone?	Close to			Thinnest	
	1 less	About the same as			Slim	
					Slimmer than	
					Slimmest	

Size	Distance	Weight	Capacity and volume	Time		
Big	Far	Weigh	Full	Days of the week	After	Slowest
Bigger than	Far away	Weighs	Fuller than	Week	Next	Slowly
Biggest	Further	Balance	Fullest	Day	Last	Old
Small	Further than	Balances	Nearly full	Week	Now	Older than
Smaller than	Furthest	Scales	Half full	Morning	Soon	Oldest
Smallest	Near	Heavy	Empty	Afternoon	Early	New
Middle	Nearer then	Heavier than	Half empty	Evening	Late	Newer than
Medium	Nearest	Heaviest	Nearly empty	Night	Quick	Newest
Taller	Close	Light	Holds more than	Bedtime	Quicker than	Takes longer than
Tall	Closer than	Lighter than		Dinnertime	Quickest	
Tallest	Closest	Lightest	Holds less than	Today	Quickly	Takes less time than
Shorter			More	Yesterday	Slow	
Short			Less	Tomorrow	Slower than	
shortest				Before		

Speed	Shape	Position and direction		Pattern
Quick	Flat	Over	Sideways	Symmetrical
Quicker than	Curved	Under	Across	Repeats
Quickest	Straight	Above	Close	Repeating
Quickly	Round	Below	Near	
Slow	Hollow	Top	Far	
Slower than	Solid	Bottom	Along	
Slowest	2D shapes	Side	Through	
Slowly	Corner	On	To from	
Fast	Side	In	Towards	
Faster than	Rectangle	Outside	Away from	
Fastest	Square	Inside	Side	
	Circle	Around	Roll	
	Triangle	In front of	Turn	
	3D shape	Behind	Stretch	
	Face	Front	Bend	
	Edge	Back		
	Cube	Beside		
	Cuboid	Next to		
	Sphere	Opposite		
	Cone	Apart		
	Pyramid	Between		
		Middle		
		Edge		
		Corner		
		Direction		
		Left		
		Right		
		Up		
		Down		
		Forwards		
		Backward		

Maths in daily routines

Staff use daily routines and structure within sessions to model and support a range of early Math skills - this includes spontaneous and planned activities.

In the moment teaching and learning opportunities are recognised and embraced by all staff, to ensure mathematical skills are experienced in a variety of contexts to deepen children's understanding of concepts.

All of the transitional routines such as tidy up time, getting ready to go outside, nappy time, snack time and home time are recognised as valuable teaching moments.



Rhymes, poems and songs

Providing opportunities for children to experience, pattern through physical exploration, finger patterns and rhythmic and auditory patterns will support this stage of conceptual subitising.

We have a set of rhymes that we want children to experience and know during their time at Netherton Park. We ensure this by introducing them to the songs, rhymes and poems at group times and within the experiences offered throughout the year as part of our continuous and enhanced provisions.

We have rhymes of the week and share these on Tapestry with the parents/carers so they can also join in and help their children at home. We use dance, movement, music and different medias to enhance the children's learning experience and support consolidation of knowing the rhymes really well.

<p>Two Little Dicky Birds Hide your</p> <p>Peter works with one hammer One, two buckle my shoe....</p> <p>Five Elephants came out to play Five little monkeys in the tree Five little monkeys jumping on the bed Five little ducks Five little speckled frogs Five little peas in a pea pod press Five fat sausages Hickory dickory dock Tommy thumb Head shoulders knees and toes</p>	<p>The ants go marching one by one Here is the Beehive Ten fat sausages Clap your hands together One little finger One, two, three, four, five once I caught a fish alive Five little men in a flying saucer Ten green bottles When Goldilocks went to the house of the bears</p>	<p>Five current buns One finger one thumb keep moving... Five jelly fish Five fish they swim in the ocean blue Ten in the bed Ten little fingers</p>
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All staff will sing regularly with the children, we ensure that we have a balance in rhymes that count up from '1' and backwards from '5'.

We include well known songs and rhymes, new and made up songs.

We love to use rhythm and rhyme to support transition times and enhance experiences in the moment to support the children's learning experiences.

Stories and texts to support understanding number and early mathematical concepts

During the children's time at Netherton Park Nursery School, we have a core set of texts that promote and support subitising, early mathematical concepts and understanding number. The books and other resources are introduced at group times as an adult directed session, as well as then in the environment supporting the resources and learning spaces created, we believe this best support the children's learning and development.

We ensure that the children are exposed to wider range of written materials, both fiction and non-fiction responding to their interests and to support their learning.

One duck stuck	Tickle my ears
Ten little Pirates	Postman bear
How big Is a million	Hide and seek pig
Goldilocks and the three bears	Fox's Socks
The three billy goats gruff	123 Vehicles
The gingerbread man	Monkey and Me
Mouse count	Yes
We all went on Safari	Tall
Run Mouse run	Hug
The very Hungry caterpillar	Me
One Mole digging a hole	There was an old lady who swallowed a fly
Dear Zoo	Who's on the Farm
Busters Zoo	Jaspers Beanstalk
Noisy Farm	Orange, pear Apple Bear
One Ted fall out of bed	Farm Chase
Clip Clop	Duck in the Truck
Ten Frogs	A Squash and a Squeeze
Where's my teddy	Owl babies
The train ride	Oliver's Fruit Salad
Rosie's walk	Oliver's Vegetables
Little Monkey	Billy's Bucket
Big bear little bear	The shopping Basket
Where's Spot?	Someone Bigger

Interventions - 3 and 4 year olds

Small group work

Following termly assessments children identified as working below age related expectations within Maths. The groups are continually monitored to track progress and children moved into and out of groups as needed. The environment will be enhanced through offering new and challenging resources, varied teaching strategies and specific group times.



Vygotsky

Vygotsky Maths interventions are a tool that are used to enhance the learning with children who need extra challenge to further develop and deepen their understanding of early mathematics. As an intervention the impact will be measured through reflection of the implementation throughout these sessions.



Learning Environments

‘Good numeracy is the best protection against unemployment, low wages and poor health.’

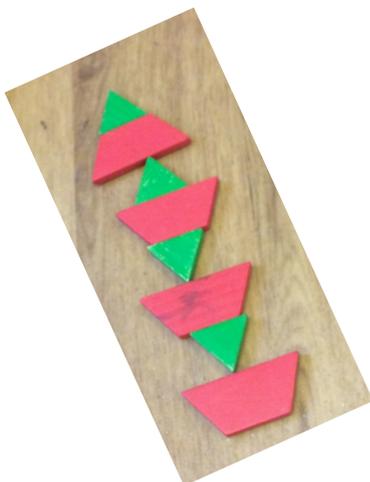
Andreas Schleicher

The learning spaces within the environments are carefully planned and resourced to support children’s early mathematical skills. Developing their curiosity, confidence and perseverance to ‘have a go’ is a priority. These skills are needed to empower the children to take on new and different experiences, that will challenge their thinking, encouraging a deeper level of critical thought.

In the moment adult’s will interact with the children, notice what it is they are interested in and support their learning, using one of the teaching techniques to best support the individual child’s learning in that moment.

We foster an approach of reflection measuring the impact as a staff team. We continue to question and reflect our practice all of the time. The staff will offer new language, objects, materials and resources to support their play ideas, introduce a new skill and enhance their development.

As a leadership team we adopt a meta-cognitive approach and reflect on our learning to meet our Intent, Implementation and Impact in this curriculum area. We carry out learning walks, this helps us identify, reflect, and evaluate our provision, to then make an changes, ensuring a high quality learning environment providing a wide range and varied learning opportunities and experiences for all of the children.



Working with parents/carers

We value our relationships with parents/carers and know that because of this our children make excellent progress. We have developed systems to share our understanding of Maths development and what parents/carers can do to support children's learning at home.



Stay and play sessions

During each academic year we invite all parents/carers to attend a Maths based stay and play session. Three differing sessions are well planned and designed to support all of the children who attend Netherton Park Nursery School including Acorn Provision(2 –3 years) Oak provision (3-4years) and any children with an identified level of need (SEND/Leapfrog)

Parents/carers are introduced to the concept that Maths is everywhere in all daily activities and the process of how young children learn counting skills. Suggestions of ways to support their child at home are shared.



Tapestry

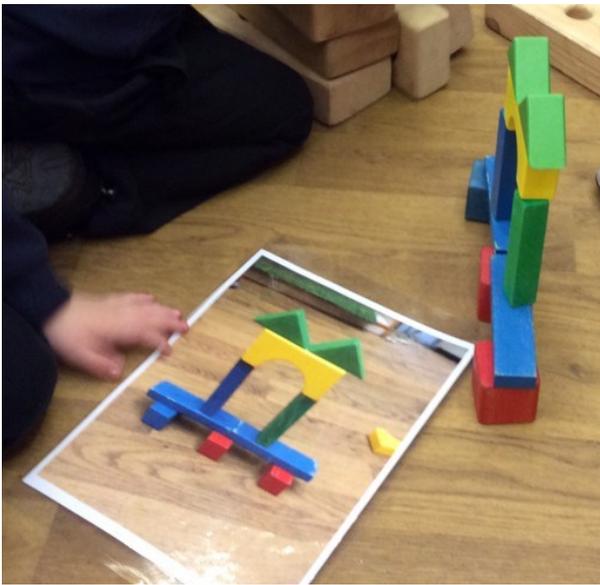
Tapestry is our main form of communication, we keep parents/carers informed of ways to help their child at home. We offer regular fun learning challenges giving parents new ideas and how to enjoy maths at home making it real. Curriculum newsletters are sent out half termly and mathematical concepts and skills are shared with parents/carers to engage them in their children's learning further. This also helps to explain these concepts to the parents to avoid misconceptions.

Impact

When children leave Netherton Park Nursery School they will do so with a solid foundation of early mathematical skills. The children will understand simple mathematical principles which they will continue to build on as they continue their education.

The children will be able to use mathematical vocabulary in a range of contexts and show their understanding through their natural curiosity and play skills.

Children will have an understanding of early number, simple problem solving skills and will have a good foundation of subitising/quantifying number to 5.



Mathematics is not about
numbers, equations,
computations, or algorithms:
it is about
UNDERSTANDING

-William Paul Thurston



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